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Primary health care development during the health care reform in China and future direction---With experience inspiration from UK

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Abstract

Primary health care (PHC) is an effective way to "optimize and reorganize the health care service system" and solve the "difficulty in obtaining expensive medical services". In the process of China's promotion of health care reform, PHC has been placed at the core part. In this paper, by tracing the history of the development of China’s PHC, and evaluating, analyzing and comparing the current similar policies in the field of PHC in China and Britain, a certain understanding of the effects of China’s current PHC policies has been presented. In the end, some suggestions inspired by UK experiences been proposed for the future development of PHC in China.

Keywords

Primary health care; China; health care reform; UK primary health care

Abstrakt

Primární zdravotní péče (PHC) je efektivní způsob, jak „optimalizovat a reorganizovat systém zdravotnických služeb“ a vyřešit „potíže se získáváním drahých lékařských služeb“. V procesu čínské podpory reformy zdravotnictví byla PHC umístěna do stěžejní části. V tomto článku je sledováním historie vývoje čínské PHC a hodnocením, analýzou a porovnáním současných podobných politik v oblasti PHC v Číně a Británii představeno určité porozumění účinkům současné čínské politiky PHC. Nakonec byly navrženy některé návrhy inspirované zkušenostmi Spojeného království pro budoucí vývoj PHC v Číně.

Klíčová slova

Primární zdravotní péče; Čína; reforma zdravotnictví; UK primární zdravotní péče

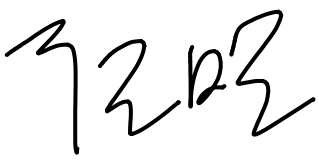
Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague 4.1.2021 Wang Ren



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1 Introduction

Primary health care (PHC) is the first phase for individuals and families to receive national medical services. [1] In 1978, the World Health organization (WHO) recommended that PHC is one of the most ideal health care models. [2] In China, Ministry of Health officially announced the establishing PHC system in 2009 which he PHC development is relatively late than countries with the same level of economic development. [3], [4] However, the origin of the PHC can actually be traced back to the emergence of the "barefoot doctor" in the 1960s in China which even contributed to the formation of the PHC concept in the world. [5]

In the last century, some health care policies related to PHC have been promoted in China. Unfortunately, with the emergence of market economic reforms [1] and various policy loopholes, the development of PHC was once at a standstill. Until the period of China's new health care reform, the government once again attached importance to the role of the PHC system and began to plan various new programs to promote the development of health care delivery and find the best solution. [6]

As of 2020, it is already the 11th year of PHC's development since China's new health care reform been executed and the last working year of the Healthy China 2020 strategy. [7], [8] Therefore, this author would like to evaluate the current policy implementation effects from the 4core aspects of general practitioner (GP), cooperation of health care institution, medical insurance system and e-health of doctor consultation to analyze some of the current policy development difficulties and propose solution. In order to conduct the more authoritative result, the author found a current benchmark country in the development of the global PHC field which is UK to compared with China's current PHC development. [9]

Through a large amount of literature reading, the author learned as one of the worlding leading country in PHC, UK has rich successful experience on the related

policy implementation such as GP system. [2], [10] Despite that, the UK has been transforming its relationship with emerging countries, including China, from an aid-based development relationship into a meaningful and mutual partnership for global development since 2011, which China take UK as a benchmarking country to learn from innovation measures to improve the health care coverage and quality of medical services for all citizens. [11]

Therefore, the author not only analyze the current situation of PHC system in China but also in UK to first prove the hypothesis that PHC do works better in UK than China. And then it discussed what are the difficulties while implementing sub-policies of PHC and come up with policy implication for future direction of development in China in the methodology session. During the discussion, the author compares 4 common aspects of polices of those two countries by scoring them to have a result about which aspects of UK PHC is doing better than China. [12] Therefore, from analysis good experience and approaches in UK PHC system, it may inspire PHC development in China and have some valuable cases or ideas which could be applied in China as well.

2 Theoretical background

2.1 Health care reform in China

As a socialistic country, in the early days of the founding of the People's Republic of China, the government was executing planned economy policy which means the development of various industries in China was planned in advance by the government. Since 1978, China began to carry out economic reforms and implemented a market economy. [13] At the same time, China's health care industry also began to undergo preliminary reforms which indicated that China's health care reform has already begun in 1985. [14] However, the process is extremely slow.

2.1.1 Health Care reform (1985-2009)

With regard to whether medical resources and services should be government-led or market-led as the core issue, this debate has continued in China for nearly 30 years and is still under discussion. At the beginning of the reform, many experts and researchers believed that health care reform should be like economic reforms in other industries, the government needs to return health care institutions to the market. [8]

During this time, many radical policies and cases emerged. In 2000, a city in southern China called Suqian began to market health care institutions, encouraging public hospitals to operate independently rather than relying on public finance budget. Under the guidance of the concept of "government capital needs to completely withdraw from health care institutions", 133 public hospitals in Suqian were been auctioned in 5 years with an ending that only two public hospitals left in the city. [15]

In 2003, the SARS epidemic spreads throughout the country. China began to reflect on the loopholes in the public health system, and then start to review the entire health care system while planning a health care reform. In May 2005, Liu Xinming, ex-

director of the Department of Policies and Regulations of the Ministry of Health, delivered a speech and believed that the "how expensive of health care treatment" and "difficult to get health care for citizens " are rooted in the poor social fairness of health care services in China and the inefficient allocation of health care resources. This solution to solve those two problems mainly relying on the government, rather than letting the reform of the health care system take the road of marketization. [13]

Through long term discussions, practice, trial-and-error, China's Health Care Reform has gradually found its direction of future development during the exploration. In the same year, at a government report meeting, ex-Minister of Health Gao Qiang finally stated on the direction of health care reform: not only to adhere to the government's leadership, but also to introduce market mechanisms in health care system. [14]

In 2007, the Ministry of Health of China proposed to implement the Healthy China 2020 strategy. [16] However, PHC didn’t been mentioned at that moment.

2.1.2 New Health Care reform (2009-2020)

In March 2009, the government issued the "Opinions on Deepening the Reform of the Health Care System" on the basis of the Healthy China Strategy 2020, which marked the official start of a new round of Health Care Reform in China and PHC has been proposed in this document first time as a new term during health care reform in China. The document highlights the dominant position of government administration in China's health care development, and at the same time puts forward the new goal of completing the universal basic health care system by 2020. From 2009 to 2020, we call it as "New Health Care Reform (NHCR)” period in China. [8]
In the period of NHCR, we will divide it into three time periods as following.[17]

1) From 2009 to 2012, during this phase, the government set five priority areas for development:

- Expanding the basic health insurance plan
- Establishing a list of essential drugs
- **Upgrading PHC services**
- Urban and rural public Greater equalization among medical care
- Pilot reforms in public hospitals started

2) From 2012 to 2015, the goal of the Health Care Reform goal is to deepen reforms in the operation, governance, salary and other aspects of public hospitals.

3) From 2015 to 2020, the strategic goals are to: [18]

- Universalize basic medical care for all citizens
- **Attach importance to the development of PHC and establish a complete PHC system**
- Improve health care and health determinants such as environment health, lifestyle, and health education

Either in the first or third stage, PHC system are extremely important elements of China's health care reform. The health care process from general practice to specialized medical treatment can improve the utilization efficiency of medical resource allocation. Medical institutions of different levels are responsible for the treatment of different diseases. Thus, the author would analyze PHC system in China from 2009 to 2020 in this paper. The coming part will go through the development of China's PHC to have a more comprehensive picture of it.

2.2 Primary Health Care

PHC is the entry point to the whole health care system and act as a “gatekeeper” of the whole health care system from the definition of World Health Organization(WHO). [1], [4] As China PHC system is playing an extremely important elements of China's new health care reform, the construction and improvement of

PHC delivery is being discussed and studied by more scholars and researcher especially in China. In this session development of PHC organizations in China has been presented to have more insight and understand of the big picture of PHC policies during the health care reform. At the end, 4 main areas of PHC polices in China and UK has been introduced.

2.2.1 The development of PHC in China

To to analyze or evaluate the development results of PHC in China today and the future direction of development, it is essential to retrace and understand the history of it. In this paper, you will find many of the “new policies” in 21st century was actually been planned or executed decades ago.

In the early stage of the founding of the People's Republic of China, the development of China's health care services started with the establishment of hospital classification standards. Through drawing on international experience, China has initially formed a three-level medical service system.[19]

- The tertiary hospitals are mainly responsible for the diagnosis and treatment of serious diseases and the difficult and complex diseases
- The second-level hospitals are mainly responsible for the diagnosis and treatment of general difficult and complex diseases and common diseases
- The primary health service center is mainly responsible for the diagnosis and treatment of common diseases and the management of chronic diseases etc.
- In addition, there are related specialized hospitals that are as same standard as the tertiary hospitals.

Even though the concept of PHC has not been formed yet at that moment, but such a classification standards of heath care institutions provides a solid foundation for improving the PHC system in China. Due to the large gap between the rich and the

poor population, most of social reforms in China have two systems in urban and rural areas to ensure that relevant policies are more targeted. Therefore, to understand the history of PHC in China, we need to analyze it from both urban and rural areas. [20]

Origin: Barefoot Doctor

China's PHC system originated in rural areas, and we call it the "barefoot doctor" system. "Barefoot doctor" is a term that began to appear in the 1960s to the mid-1970s. It refers to health care physicians with certain medical knowledge and ability who are generally approved and assigned by the village or local government and are employed by the local township hospitals. What we might call the prototype of the GPs.

Their characteristic of them is the constant switching between the roles of farmers and doctors, which can also be understood as they are doing doctors' work as their part-time job. They do farm work when farming is busy, and they do doctor' s work when they are free. For example, some "barefoot doctors" always work in farming during the day and go to villagers' homes for health care consultations at night. Although their medical skills are limited, this method greatly guarantees people's needs and rights to receive basic health care services when the overall conditions are relatively backward. [5]

In the countryside, the selection of barefoot doctors is generally based on the following two conditions. One is to select from medical families, and the other is to select from high school graduates who have a little knowledge of medical pathology. After being selected, they will be trained in health schools in cities for about a year. Once they graduated, they will be regarded as barefoot doctors in the countryside. The barefoot doctors in the countryside have relatively low knowledge of medicine and pathology because they have not received systematic studies. The good side is that barefoot doctors can solve general illnesses such as headaches, fever, bruises which

greatly facilitates the villagers as they have no time to go to the hospital to see a professional doctor dur to inconvenient of the transportation to the hospital. Therefore, at that time people respect the barefoot doctor very much. [21]

Until 1985, with the development of social economy, the Ministry of Health announced the cancellation of the name "barefoot doctor" and replaced it with "village doctor". This change is not only in name, but also in substance. Village doctors need to pass relevant training with strict professionalism in order to obtain relevant qualification certificates and start their own clinics with a formal license. The Regulations on the Practice of Village Doctor, which came into effect on 1st January 2004, set out the entry criteria for doctors who are in rural areas. [4]

Prototype: strict referral system

In 1978, when medical insurance was not universal, only some public servant had the right to enjoy the public medical insurance system. However, as the government attaches great importance to rural residents, the pilot work of rural residents' insurance has also been launched in 1979. [21], [22]

The government established a very strict referral system for both the staff who enjoyed public medical insurance system and the rural residents who were in the process of pilot work. People first need to see a doctor at their community clinic based on their living address. After the doctor issues a referral form based on their heath condition, the patient can be transferred to the corresponding higher-level medical institution for treatment.[22]

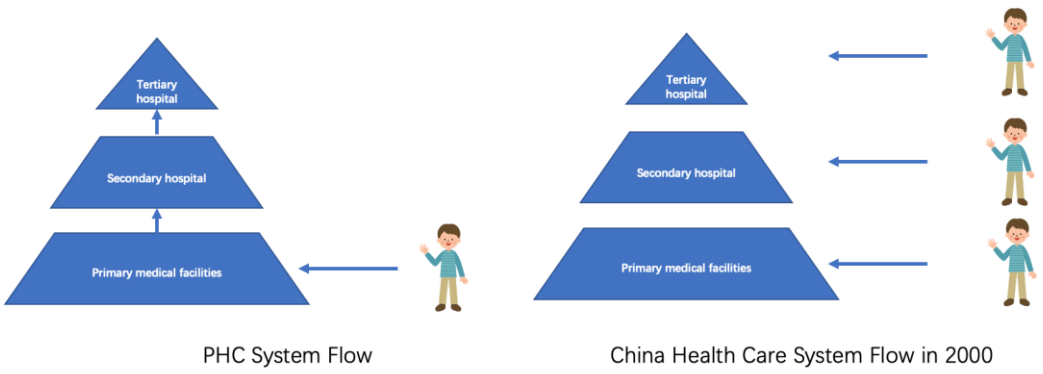
During the same period, the number of community hospitals across the country rose rapidly from only about 2,000 to about 13,000.[20] Therefore, the PHC system began to take shape in China during this period.

Transition: The collapse of the PHC system under the reform of economy

After 1978, with the development of China's economic reform, all industries have been market-oriented included health care industry. [13] The government's investment in community health care institutions has decreased year by year, and many health centers closed down. More health care facilities are privatized and become purely profit-oriented pharmacy. Thus, they are no longer responsible for public health care work. [20]

In 1998, the referral system was collapsed along with the marketization of heath care institutions. With the promotion and development of the health care insurance system for urban and rural residents, the insurance system allowed people to freely choose medical institutions for health care services from all classification and any pharmacies to purchase medicine. [22] People are more inclined to go to hospitals with doctors who have more authoritative professionalism skills.

Therefore, the homogeneity competition among medical institutions at the same level is fierce, and the functional positioning of medical institutions at different levels is gradually blurred. The cooperation mechanism in the hospital classification standards system is in vain as well. (see table1)



PHC System Flow China Health Care System Flow in 2000

Table 1: PHC system flow VS China health care system flow in 2000

Restart: the practice of PHC during the NHCR

After experiencing the changes in the previous periods, until the NHCR started from 2009, the PHC system returned to the center of the reform again, which marked the beginning of PHC system in China. [15] The PHC system model mainly relies on government guidance to influence residents to choose PHC institutions. The government guidance means shows in 4 aspects as following:

- GPs: the government has introduced a service model in which PHC providers sign contracts with families to establish a fixed doctor-patient relationship which means the establishment of a GP system.

- Cooperation of health care institution: the government advocates that health care institutions clarify their own functional positioning to promote all levels health care institutions to perform their duties in a professional and efficient way. At the same time, it requires high-level hospitals or medical organizations to cooperate with PHC institutions.

- Medical insurance system: the government also guides residents to seek health care treatment by formulating differences in medical insurance reimbursement. For example, the principle of decreasing the reimbursement ratio for PHC institutions and higher-level medical institutions is hoped to allow residents to choose the former more. [23]

- E-health doctor consultation: encourage corporate to develop online doctor consultation platforms. [24]

2.2.2 Policies applied in PHC during NHCR

During the NHCR period, the government attached great importance to the reform of PHC, which, as a core content, became the fundament of the overall Health Care Reform. [25]

From the perspective of national policy, PHC and its related content have been repeatedly mentioned and emphasized. From 2009 to 2017, a total of 7 national-level documents related to the PHC reform (see Table 2).

Filed	Year	Policy Title	PHC Related Content and Goal
GPs	2013	Decision of the Central Committee of the Communist Party of China on Several Major Issues of Comprehensively Deepening Reform	Improve the PHC system and establish GPs system
	2016	“Healthy China 2030" Planning Outline	Enhance the professionalism of employees in PHC institutions and improve the GPs system.
Cooperation of health care institution	2009	Opinions of the Central Committee of the Communist Party of China and the State Council on Deepening the Reform of the Medical and Health System	Guide general diagnosis and treatment to the PHC institutions and gradually promote referral system
	2015	National PHC System Planning Outline (2015-2020)	Improve the PHC system and improve the operation of PHC services.
	2015	Guiding Opinions on Promoting the Construction of PHC System	Improve the PHC service with focusing on strengthening PHC facilities
Medical insurance system	2016	The 13th Five-Year Plan for Deepening the Reform of Health Care System	Encourage local governments to strengthen innovation to implement various forms of PHC systems in accordance with the actual environment. Establish and promote Regional Medical Consortium System: building a new order of cooperation between hospitals in different levels under the same region.
E-health: Doctor Consultation	2018	General Office of the State Council on the promotion of "Internet + health care" development of views	Encourage corporate to develop online doctor consultation platforms

Table 2: Main national policies related to PHC since 2009 in China

In addition to the promotion of national policies, the local governments of provinces and cities have also been given great space for reform and innovation. As long as the innovation plan submitted by the local government is reasonable, the central government will approve the pilot policy project in that place. Once the local experience goes well after necessary evaluation, then this method will be extended to implement nationwide. According to incomplete statistics, there are at least 20 provinces and more than 1,000 counties and districts in the country that have carried out trials of PHC policy. [26]

As of 2020, China has basically established a PHC system. [8] Among them, the PHC system development could be categorized as 4 polices: **1) GPs, 2) Cooperation of health care institution, 3) Medical insurance system** and **4) e-health of doctor consultation.** Following are overview of those 4 policies of PHC system in China.

2.2.2.1 GPs

GPs is also called GP, whose main task is to provide family health care services and personalized prevention, health care, treatment, rehabilitation, health education services and guidance, so that patients can solve their small illness at home as well. A GPs is not a private doctor. [27] Since 2013, China started to build GP system by promoting signing of contracts between GPs and residents. Establishing a GPs system is an essential part of improving China's PHC situation.

For encouraging citizens signing contract with GPs clinic, the government announced that contracted residents can receive national basic public health services including resident health record management, health education, vaccination services, children's health management, maternal health management, health management for people over 65 years old, health management for patients with hypertension and diabetes, health management for patients with severe mental disorders, health management for

patients with tuberculosis, health management for Chinese medicine, etc. At the same time, patients can also enjoy services like personalized services including family hospital beds and home care. [28], [29]

Regarding the criteria for practicing as a GP, specialized certification is not compulsory for them. As a doctor, they can become a GP by opening their own clinic with easily. Or they could either get a national certification by a complex process to be more authority and have a good reputation and enjoy the rights of join public hospital GP system. [30]

However, to get the national certification they need to first qualify for the national GP certification exam and subsequently pass the exam, then they can obtain the appropriate qualification exam certificate. [31] Qualification for participating the GP certification examination has the following conditions:

- *Obtain a secondary vocational school degree in the corresponding specialty and be employed as a physician for 7 years.*
- *Obtain a junior college degree in the corresponding specialty and be employed as a physician for 6 years.*
- *Obtain a bachelor's degree in the corresponding specialty and be employed as a physician for 4 years.*
- *Obtain the corresponding professional master's degree, employed as a physician position for 2 years.*
- *Obtain the corresponding professional doctorate.*

In conclusion, higher of the educational background candidates have less years of work experience are required.

2.2.2.2 Cooperation of health care institution (RMCS)

The RMCS is to integrate medical resources in the same area. Usually, a medical consortium is composed of tertiary hospitals, secondary hospitals and PHC institutions in the same region. [32]

Residents in this area can sign up for medical treatment in their local RMCS or they can still go to other hospitals with a medical insurance card. However, it is more convenient to get medical treatment and more benefits inside the RMCS. For example, patients would have complete and instant e-health records within their local RMCS which support them enjoy the priority access of medical resources which offered by high-level hospitals by internal referral channels. In another words, patients through RMCS referral don't need to wait in the queue anymore compare to people who directly go to the secondary or tertiary hospitals. [33], [34]

Double-Referrals system can help PHC institutions and other levels of hospitals work more efficiency. Under this regime, patients can be referred to specialized or high-level hospitals after consulting with doctors of PHC system. [32], [33] Additionally, after treatment at a large hospital and with the better situation of their health situation, patients will also be referred back to their PHC institutions for follow-up treatment and after-care.

On the other hand, RMCS could improve the medical capacity of the secondary hospitals and PHC institutions. [33] Tertiary hospital will provide free assistance and the other health care institutions by sending experts or experienced doctors fort short-term workshop, seminar and guiding their daily work operation. At the same time, doctors from PHC institutions also can get training from high-level hospitals to improve their professional skills. [35]

2.2.2.3 Public Medical Insurance System

The main measure of the public medical insurance system in promoting PHC is a differentiated reimbursement system, which to a certain extent will allow price-sensitive patients to choose medical treatment at the PHC level rather than secondary and tertiary hospitals. It also clearly stipulates that patients must choose 1-2 PHC institutions in their public medical insurance system. Patients can have much bigger ratio for reimburse their payments of health care only if they followed the PHC system that chosen went to registered PHC institutions. [22]

Currently, the health insurance reimbursement ratio between PHC health institutions and tertiary hospitals has been pulled apart by more than 10 percentage points, and the starting line is calculated continuously for patients who meet the conditions for inpatient referrals. [36] Most of areas in China have set a ladder of starting payment standards and reimbursement ratios for visits to medical institutions at different levels and across coordinating regions, with a tilt toward PHC institutions.

2.2.2.4 E-health of doctor consultation

Through the Internet platform, everyone can share all kinds of social resources in a timely manner, which promotes the development of social equity. Similarly, when Internet technology is applied to the medical field, it also serves to promote the optimal distribution of medical resources.

E-health is used in various systems of PHC in China in recent years. Especially during the building of GPs system, patients can conduct online disease consultation and remote treatment through hospitals or independent third-party medical mobile applications. [14] Due to the shortage of medical resources and unbalance allocation, the number of GPs is very scarce in rural areas. However, with the rapid development of e-health, a variety of health management medical mobile applications have emerged, and online GPs is gradually entering thousands of households.

The Internet is an all-encompassing information interface tool that extends health care services from inside the hospital to outside. Through the Internet platform, patients can easily access good out-of-hospital medical services. For common illness, the doctor can answer directly online based on symptoms information patients submitted. Therefore, patients do not have to go all the way to the hospital and spend a lot of energy registering and waiting in the queue.

This significantly improves the efficiency of the treatment and multiplies the effect with half the effort. Patients can use their smartphones for intelligent medical guidance, remote diagnosis and treatment, examination report inquiries, online payment and drug delivery, which greatly reduce times and promote information transparency to ensures patient safety. It has brought great changes especially to rural areas where professional doctors and abundant medicines resources are lacking. [37]

2.2.3 Similar Policies in UK

The British National Medical Service System (NHS) shares a hierarchical diagnosis and treatment system with endogenous motivation and self-hematopoietic ability, which was once rated as the world's best medical system by the global authoritative rating agency Commonwealth Fund. [38] It designed many of effective policies not only in PHC area but also the whole health care industry. As one of the earliest and best countries to implement PHC in the world, this part of article indicated how UK is working on above 4 mentioned areas in building PHC system in China.

2.2.3.1 GPs

NHS is composed of a similar three-level medical service system with GPs providing basic health care services, regional general hospitals providing comprehensive and specialist medical services, and specialist hospitals providing diagnosis and treatment

of intractable diseases. The medical and health service network allocates health resources reasonably to provide services to the people.

First-level health care system are provided by GP and family clinics, they play the role of "gatekeeper" and mainly for people with usual illnesses, drug and alcohol abuse, and minor illnesses. According to statistics, 90% of patients in the UK can be cured in the PHC stage and 75% of the funding of NHS are also used for the PHC system. [39]

Currently, there are about 36,000 GPs in the UK, of which about 75% are freelance doctors. They run their own clinics which has to be responsible for their own profits and losses, meanwhile they provide patients with PHC services and refer them to hospitals. The other 25% of GPs are employed by the NHS and assigned to clinics by the center body of NHS directly. These doctors can be employed in few clinics at the same time. [38]

At the same time, the UK established a strict referral system and a vocational training model for GPs through legislation, which paved the way for the construction of a complete PHC system. The law stipulates that every British national has to have their own contracted GP and registered in PHC clinic. Only emergency patients can go directly to the emergency department of a hospital, and patients who have difficulty going to a GP practice when traveling can go to a special NHS "Walk-In Clinic", otherwise patients must first go to their own GP. A strict referral system keeps a large number of patients in the general practice clinic. [40]

In addition, for expanding the numbers of GP, the NHS built a "4+1" model, requiring doctors in public hospitals to work there 4 days a week, and the remaining 1 day they can choose to work in other hospitals or PHC institutions.

2.2.3.2 Cooperation of health care institution (FTs)

Following the principle of combining government regulation and market competition, UK has adopted measures such as decentralization reform and the establishment of internal market mechanisms, especially by dividing the country into 10 strategic regions based on geographical and other characteristics, and forming a medical consortium belonging to the NHS, which people often call it as NHS Trust. [41], [42]

NHS Trust member organizations are generally secondary and tertiary care facilities, mental health centers, and medical emergency centers in their regions. With the establishment of the NHS Trust system, public hospitals ceased to be government budgetary units and were transformed into public corporations, which were separated from the administrative hierarchy of the health administration and had to compete to obtain payment from payers. However, since NHS Trust hospitals are still owned by the government, the NHS still set financial targets for them, i.e., operating income must be at least 6% of their asset value. [43]

The subsequent NHS Reform, *Act of 2002*, enacted by the government, reformed NHS Trusts by creating Foundation Trusts (FTs), further divesting public hospitals from the government. Hospital operations are left to the discretion of individual local residents and enjoy greater financial autonomy - there is no need to guarantee annual break-even, as long as debt levels meet regulatory. As long as the debt level is in line with regulatory requirements, the balance can be retained, and of course the government is not financially responsible for the debt. [42], [43]

2.2.3.3 Public Medical Insurance System

The British health care system is a national budgetary health insurance system. The British government emphasizes broad and equal access to health care services, and the government finances national health care services mainly through taxation. Its NHS

health insurance model is divided into two major systems: the community health care system and the hospital services system. the PHC system provides more than 90% of primary care services, with less than 10% of services transferred to the hospital services system.

Hence, as the author mentioned in the GPs session, UK has a strict PHC system where residents must choose a GP to sign up and have their first medical consultation in order to receive free NHS healthcare services. Accordingly, only citizens registered with a valid GP, then they can enjoy the NHS service. This fundamentally ensures that the patient participation in PHC system.

2.2.3.4 E-health of doctor consultation

At the beginning of this century, the UK invested 6.2 billion pounds to build the NHS National Medical Information Project, which was basically completed by 2009. [44], [45] At the beginning of the new year in 2019, in the new five-year development plan, the UK government began to implement an ambitious plan to provide residents PHC services throughout the UK with more and more complete mobile health and remote services by the end of 2023. "Digital health, mobile telemedicine services" will become one of the focus of the British national five-year development plan.

Ex-Prime Minister Theresa May, on the basis of increasing the NHS budget, requested that a plan to prioritize the development of telemedicine be formulated so that every British citizen can obtain diversified health management and disease treatment consultations through mobile and remote methods. Allow all patients to "remote communication" with the attending doctor. This plan must be completed before the end of 2023. [6]

The NHS launched a nationwide medical plan called "GP At Hand" in 2017, allowing doctors to see patients through video calls or text messages. Of course, like other

medical services provided by the NHS, there is no charge. [46] With all the commercial PHC services online platform coming up on the internet, the NHS also hopes to establish a unified national mobile health App project to provide all consumers with convenient access to personal medical information and health data, as well as appointments and doctor follow-up management.

3 Methodology

This methodology part is aimed to provide an analysis of the evaluation of current PHC policies in China and then compare with UK's PHC polices to get inspiration for future. Firstly, the motivation of research is presented. Secondly, it is the description of methodological approach design and

3.1 Aim

PHC is an important feature of the health system and it is the foundation of China's health care reform. [47] Many other problems in the health care system will also be solved with the process of improving the PHC system. Furthermore, this year is the last year of *National PHC System Planning Outline (2015-2020)*. By evaluating the current work outcome, we will find the advantages and disadvantages of related polices. Therefore, the aim of the research objective is to get implication and come up with suggestions of futures directions of PHC development in China.

3.2 Methodology

Outcome-based evaluation method of policy evaluation is the core methodology while companying with comparison study of this paper. The idea from Prof. Pirkko Vartiainen about comparison evaluation inspired the methodology which I've chosen. In the original version of his model, it combines evaluation research and comparative research these two approaches to the abstract cross-twine. [12]

Through the selection of comparison objects, the authors assume that the UK PHC policy as a whole is better than that of China and therefore can be used as an object for benchmarking. From this, the development direction of PHC-related policies in China is obtained. Thus, the author primarily did policy evaluation both on China and

benchmarking country, then had a discussion based on the evaluation result to find out the inspiration ideas.

The specific research methods are described in the next sections, and theoretical details can be referred to Peter Drucker. [48] Given that above mentioned 4 policies are still ongoing, a process evaluation approach is used. From summarizing and analyzing the current phase policy effectiveness, it expects correct those deviations from the expected goals to ensure that the policy will back on track. This is done by scoring the effectiveness of the policy implementation.

In addition, after analyzing the four policies, the authors analyzed the policies with scoring system below by comparing the implementation of the relevant PHC polices in the benchmarking country – UK to identify the successful experiences that China can learn from.

3.2.1 Research Questions

Based on the Chapter 2 that the review of PHC polices in China and UK and learning the way of setting criteria for PHC evaluation introduced in the article written by Vélez Álvarez, to conduct objectively evaluation, following research questions were formulated: [49]

A. Are consumers satisfied with the policy?
    a. Is the consumer aware of (heard about) the policy?
    b. Is the consumer participating in the use of the policy?
    c. Why did the consumer (not) choose the policy?

B. What is the implementing agent’s assessment of the effectiveness of the policy's implementation?

d. Was the process of implementing the policy smooth for the implementing agency?
e. Did the implementing agency encounter difficulties?

C. Are the relevant elements of the policy's regulations and system sound?
f. Is there a relevant legal guarantee?
g. Is there a unified system standard?

The selection of evaluation study literature review was performed by reading and analyzing the title and the abstracts and irrelevant papers were extracted. Meanwhile, database also been applied. In total 29 academic files (thesis, journal article, report from national authority and webpage) and 3 Annex has been used as evaluation sources.

3.2.2 Scoring Standard

The scores of each alternative would be from 1 as the lowest score to 3 as the highest score for all criteria which are consumer, executive agents and regulation. More scores indicate better implementation of the policy.

1	Very Dissatisfied
1.5	Dissatisfied
2	OK
2.5	Satisfied
3	Very Satisfied

During chapter 5, the authors will use excel as tool to summarize the content and score the evaluation results.

3.2.3 Comparison object

As one of the worlding leading country in PHC, UK has rich successful experience on the related policy implementation such as GP system. Despite that, UK and China have a mutual partnership for global development since 2011, which learning from each other's in the health care field is one of the key elements of the partnership. Thus, the author took UK as a comparison country.

Higher Level of PHC system than China

During the worldwide report from WHO Primary Health Care: A Framework for Future Strategic Directions, it summed up reflect insight, proof and discernments from around the global of 25 years of PHC strategy execution. It portrays four fundamental situations, which could educate Member State choices about the bearing that their PHC improvement may take. Those four scenarios are: [38]

- *Completing implementation*
- *Strengthening to meet new challenges*
- *Locating PHC in a new paradigm*
- *Responding to a population health crisis*

China is currently in the second stage of reinforcement and the UK PHC system has gone through this stage of development and has entered the third stage. With the help of the successful experience in the second phase of the development of UK, such as the scientific design of the UK in establishing a comprehensive GP system and the support of the UK's excellent medical insurance system for the development of PHC, it can bring some enlightenment to the development of PHC in China. [50]

Aid-based development relationship between UK and China from 2011

The UK has been transforming its relationship with emerging countries, including China, from an aid-based development relationship into a meaningful and mutual partnership for global development since 2011, which China take UK as a benchmarking country to learn from innovation measures to improve the health care coverage and quality of medical services for all citizens.

In 2011, the Department for International Development of the United Kingdom decided to begin to transform material assistance to China into sharing successful experiences in various fields with developing countries. While helping, we also learn successful experience from emerging economies such as China and jointly contribute to international development. [51]

3.2.4 Policy Evaluation

In this section, the authors analyze and evaluate China and the UK in four different PHC policy areas based on literature review and data.

GPs

China

Based on the survey conducted YIN D, [3] the results on the satisfaction of GP about their profession showed that their overall satisfaction was low, especially with the salary system. The reasons for this are related to the kills of GPs that can hardly meet the job requirements. And poor working environment, too much temporary work, and unreasonable existing assessment mechanism are other reasons.

At present, GPs contracting is mainly promoted through free community consultation activities, publicity and distribution of materials, guiding patients to sign up in

outpatient clinics, and media publicity, in order to increase residents' awareness. However, residents still lack trust in GPs. [52], [53] On the one hand, they do not trust the professional skills of GPs, and on the other hand, they are worried that the implementation of community first consultation after contracting will affect their freedom of consultation or even delay the treatment, which is an important reason why the contracting rate in some areas has not reached the expected target.

Nevertheless, from table 3 we can see the number of GP is increasing year by year from 2012 to 2018 which shows the policy about encourage more talents join the GP team works in China. According to the data about GP with certification trending, it decreased dramatically in 2018. On the one hand, more GP get patients by their professional reputation which spread person to person, they are no longer need other certification to improve their current situation as the national certification is optional to become a GP. [31] On the other hand, it is too hard for them to get a national certification. And the benefits are not attractive. [53]

	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
GP	145511	172597	172597	188649	209083	252717	308740
GP per 10,000 person	0.81	1.07	1.27	1.37	1.51	1.82	2.22
GP obtained training certification	72621	98109	108441	120285	131452	156482	151940
GP with training	49.91%	56.84%	62.83%	63.76%	62.87%	61.92%	49.21%

Table 3: Number of GP 2012- 2018 in China, original data collected from Annex 1/2

UK

In the UK, about 99% of residents have their own GP, and each GP serves more than 2,000 customers. [40] Through PHC and referral system, patients have achieved personalized treatment in the diagnosis and treatment system at all levels. Especially under the premise of the PHC of GP, the needs of most patients have been met in the community clinics, and medical resources have been adequate utilized. Fair utilization reduces the pressure on big hospitals.

From the GP Patient Survey 2020 which conducted by NHS, the majority of individuals (81.8%) rated their overall experience of their GP practice as good, with more than two in five (43.6%) rating their experience as 'very good'. [54]

The UK has a standardized system for the management of general practice, which requires a systematic and standardized training of GPs, with high entry barriers and strict entry tests. [55] The overall quality of GPs in the UK is very high, and this high quality is first and foremost due to the traditionally high level of medical education in the UK. In order to become a GP, a rigorous training program is required after medical school. A minimum of 9 years of medical education and training are required. The final exam is called the Royal College of GPs examination. Once qualified, they are required to submit an annual report on their work and undergo an inspection and assessment before they can continue to practice. [9]

The GP remuneration structure includes capitation fees, additional services, enhanced services and other items. The capitation fee is the most important source of income for GPs. In addition to allocating core funds to basic medical services and additional services provided by GPs, the payment takes into account the actual needs of patients contracted by GPs and the prices of medical services required. It also take into account characteristics of patient such as age, gender, regional differences and health status, then calculate the number of patient weights based on actual needs. As a result,

two GPs with the same number of patients may have different patient-weighted numbers and thus receive different levels of funding payments due to differences in patient characteristics and health status. The OECD claims that UK is one of the best remuneration system for GP countries among European countries. [56]

Cooperation of health care institution

China

In the RMCS, Large hospitals within the consortium can send professional medical staff to small hospitals to exchange and guide the business model and service concept of small hospitals, so that the work of hospitals within the consortium can be standardized. [57] However, even in public hospitals, medical facilities are still profit-oriented. In order to increase income, some large medical institutions still use their own advantages to "siphon" patients and squeeze the interests of PHC institutions. [57]

Double-Referrals system doesn’t work well between PHC institutions and other levels of hospitals. Since no reasonable benefit-sharing mechanism has been established within the RMCS, large hospitals lack the incentive to transfer patients downward, which is compounded by the pressure of departmental profitability and low motivation.[34], [58], [59] The referral flow of patients is not smooth and works during the PHC to higher-level institutions. After PHC institutions referred patients to higher-level hospitals, the high-level hospitals just kept the patient to make more profit no matter if the health situation of patients get better. Thus, it increased the losing of patients for PHC clinics.[59]

Within the RMCS, a system of sharing high-quality expert resources is being implemented. However, in practice, the PHC professionals are more willing to stay in big hospitals or jump out of the grassroots hospitals due to the influence of better

salary and treatment after training in bigger hospitals. This ultimately leads to a lack of talents and inefficiency in PHC facilities. [60]

UK

With the foundation of FTs, the payers (Medical Insurance) and providers (FTs) of medical care services in the UK are no longer led solely by the government, and a market-based purchasing relationship has been formed. [61] As the PHC system is independent of the FTs, and the PHC system provides about 90% of the health care services in the UK, the GPs and PHC clinics have become the largest consumers of FTs on behalf of patients purchasing services from FTs providers. Such a financial cycle reinforces the central position of the PHC system in the overall health care in UK. At the same time, GPs, as purchasers of healthcare services, require a higher level of expertise to purchase healthcare service for their patients. [42]

Although FTs have their own regulation, the government requires the medical commissioners to conduct regular reviews of its performance. The reviews cover not only the ease of access to services and the quality of services, but also the efficiency with which the trusts are running their work and the experience of their staff. [41], [42] This policy has made the entire institutional process more transparent and has helped it run efficiently and cleanly. [62] FTs have made good progress in reducing the waiting time for people to access health services.

However, there is little evidence of any significant improvement in the quality of healthcare services, with some aspects even deteriorating. In addition, interviews with clinical staff indicated that the move to FTs had not changed the way in which clinical care was delivered, a finding that was confirmed by staff of PHC. [43], [62]

Public Medical Insurance System

China

The government has appropriately increased the reimbursement ratio of medical insurance for PHC institutions to guide patients firstly choose community clinic or GPs rather than secondary and tertiary hospitals for PHC. At present, the reimbursement ratio of medical insurance for PHC and tertiary hospitals has been pulled apart by more than 10 percentage points. Most regions have set the starting payment standards and reimbursement ratios for visits to medical institutions at different levels in a stepwise manner, with a lean to PHC institutions. [36]

Currently, the 10% difference in reimbursement ratio between different levels of medical institutions in most regions is still quite acceptable for patients as the consultation fee is not high. Most of patients still choose secondary hospitals with better quality of service and expertise. [63]

A 5% increase in PHC institution insurance reimbursement rates can lead to a 0.5% to 0.8% increase in the probability of patients having PHC at community hospitals or family physicians. The results of the study suggest that the differential reimbursement policy does have a steering effect on patients, but the overall impact is limited and varies by disease type and age. [64]

UK

From Public satisfaction with the NHS and social care in 2019 report, as in 2019, 60% of the public were ‘very’ or ‘quite’ satisfied with the NHS. This 7% increase over the previous year is statistically significant. Public dissatisfaction with the NHS was 25% in 2019, down from 30% in 2018. This fall was also statistically significant and is the lowest level of dissatisfaction reported since 2017. [65], [66] We can see in generally, more than half of the citizens are satisfied with the current NHS which is main format of UK medical insurance system.

Thanks to the strictly regulated access process requirements, UK is one of the strictest countries in the world to implement the GP system, in the form of laws to regulate the access process that only registered patients can enjoy the medical system free of charge. [66]

E-health of doctor consultation

China

In China, due to the shortage of medical resources and unbalanced health care delivery, the number of GP is limited in rural areas. However, with the rapid development of e-health, a variety of health management medical applications have emerged. In July 2014, Tencent invested US$70 million in Dingxiangyuan, which has attracted more than 4 million users, including about 2 million certified doctors. Dingxiangyuan has attracted over 4 million users, including about 2 million certified doctors. [67] With e-health's interaction, doctors have more trusted support platforms.

Table 4: Dingxiangyuan Doctor APP Main Interface

In this format of e-health, it helps the government eliminate the inequality and injustice of PHC delivery between developed and rural areas. Nowadays, e-health plays an important role in PHC under the epidemic of COVID-19. It doesn't require the face-to-face consultation between doctor and patients, hence, reduced the risk of virus spreading. [68] However, the insufficient standardization of e-health platforms is also a problem need to be solved. [37]

Laws related to e-health are lagging behind. At present, the only Internet health care-related laws and regulations in China are the "Internet Health care Information Service Administration Law" issued by the Ministry of Health in 2009, which has extremely helped standardize the criteria for physicians to join the online consultation platforms. Whereas laws and regulations that need to be improved for this new thing of e-health. Issues such as the Internet practice of doctors, medical insurance settlement, handling of disputes arising from Internet health care, information security and privacy protection of patients need to be further clarified. [37]

UK

In 2004, the General Medical Council (GMC) issued new practice guidelines (further revised in 2006) which detail conditions to be met in condition of remote e-consultation between doctor and patients. It mainly focus the using of patients medical record and private data on online health care platform. [69]

Online GP consultation is becoming more and more popular in the UK, and the most direct manifestation is the increasing number of PushDoctor users who are mainly engaged in video consultations. PushDoctor is an online doctor consulting company in the UK, established in 2013.

Till now, PushDoctor has more than 7,000 certified British general doctors, providing uninterrupted consultation services. Registered patients can make appointments for GPs both in APP and computer desktop. After the doctor has issued the prescription, the patient can share the prescription to the nearest pharmacy to grab the medicine. [70] In addition, PushDoctor also provides referral services. When the user needs to consult an expert, provide a referral appointment. Doctors on the platform can send referral letters to allow users to get treatment as soon as possible. Livi and Babylon are similar online platform in UK market.

In interview a GP from UK, she said “we are now offering it to all patients who register. It is nice to see that patients are really using this online service, and our stats show that 70 to 120% of patients with access are viewing their results online.” Stats higher than 100% mean that patients have consulted their online results more than once. [71] The majority of patients would, where appropriate, prefer more virtual appointments in the future in comparison to face-to-face appointments and it was found to be more convenient for the patient. Meanwhile, in 90% of cases, a virtual appointment was seen to be appropriate by the clinician. [46], [72]

3.3 Result

3.3.1 Findings

Following tables are based on the evaluation content and scoring standard to conduct measurable result.

GPs

China

	Goal	Outcome	Grade
Consumer	More citizens have their registered GP	The number of GP contracted patients is slowly growing	2
Execute Body	Increase the number of GP	The number of GP is increaing year by year, but the professionalism of GP are low	1.5
Regulation	Enhance the professionalism of employees in PHC	The certification rate of GP is decreasing from 2017 to 2018	1.5
			5

Table 5.1: GPs policy evaluation of China

UK

	Goal	Outcome	Grade
Consumer	All citizens strictly follow the PHC system	99% of residents have their own GP	2.5
Execute Body	High quality and professionalism of GP	Standardized system of GP certification has been formed	2.5
Regulation	Strict system to ensure the quality of GP and ensure GP can enjoy good remuneration	UK is one of the best remuneration system for GP countries among European countries	3
			8

Table 5.2: GPs policy evaluation of UK

Cooperation of health care institution

China

	Goal	Outcome	Grade
Consumer	More citizens participates RMCS	Low participation rate due to lack of promotion of policy	1.5
Execute Body	The quality of PHC has been improved and the situation of too many patients seeking for PHC in other leve has been sovled	High-levels hospitals kept patients from PHC referred them, and visiting doctors from PHC instituions also doesnt wanna go back	1
Regulation	N/A	N/A	0
			2.5

Table 5.3: Cooperation of health care institution policy evaluation of China

UK

	Goal	Outcome	Grade
Consumer	Easier access of health care service for patients	Easier access but quality of sevice didn't change	2
Execute Body	Work more functional and less finance investment from government	Only need 6% of government foundation	2.5
Regulation	N/A	N/A	0
			4.5

Table 5.4: Cooperation of health care institution policy evaluation of UK

Public Medical Insurance System

China

	Goal	Outcome	Grade
Consumer	More patients participate in PHC system	It works but with minors influence on patients	2
Execute Body	Reducing the burden of high patient load in secondary and tertiary hospitals	Minors improvement due to the quality of PHC instituion service cannot meet the requierment from patients	1.5
Regulation	Find the most balance reimbursement ratio by praticing	Around 10% difference among different level of health care institutions, not strict enough	1.5
			5

Table 5.5: Public medical insurance system policy evaluation of China

UK

	Goal	Outcome	Grade
Consumer	People's full participation of PHC system	99% of residents have their own GP	3
Execute Body	Good quality of PHC delivery	More than half of the citizens are satisfied with the current NHS	2
Regulation	Legalize the imporatant of PHC in health care system	UK is one of the strictest countries in the world to implement the GP system	2.5
			7.5

Table 5.6: Public medical insurance system policy evaluation of UK

E-health of doctor consultation

China

	Goal	Outcome	Grade
Consumer	People in rural area have more access of PHC delivery	More than 4 million users on one online conmmercial PHC platform	2.5
Execute Body	Reducing the burden of high patient load in secondary and tertiary hospitals	2 million certified doctors on one online conmmercial PHC platform	3
Regulation	Regulation of physician access standards, online drug delivery platforms and PHC services	In 2009, there's one law has been conducted about the regulation of phsician access standards	2
			7.5

Table 5.7: e-health of doctor consultation policy evaluation of China

UK

	Goal	Outcome	Grade
Consumer	Simiplize the process of PHC delivery	Majority of patients in the survey think its more convenient than face-to-face consultaiton	2.5
Execute Body	Reducing work stress for PHC practitioners	Clinician think 90% of cases is appropriate to use e-consultation	2.5
Regulation	Ensure the pricacy of users	Practice guidelines has been published reagrding the protection of privacy of patients	2.5
			7.5

Table 5.7: e-health of doctor consultation policy evaluation of UK

3.3.2 Summary of findings

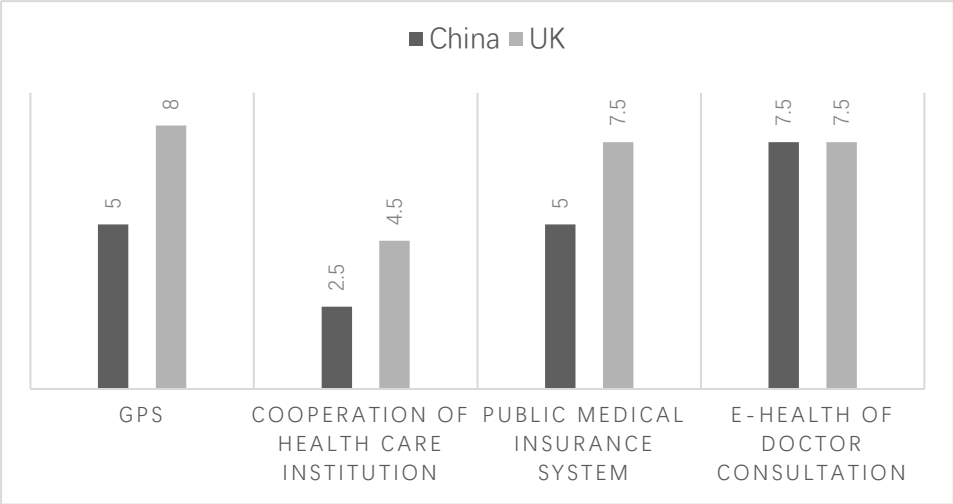


Table 6: Summary of policy evaluation of China and UK

4 Discussion

Based on the policy evaluation results of the result session, it can be seen that the overall development of the British PHC system is higher than that of China. The specific content has been discussed in detail below.

4.1 Discussion of key findings

For the policy evaluation between China and the UK in the aspects of GPs, cooperation of health care institution, public medical insurance system and e-health of doctor consultation, it is verified that the research results and the paper hypothesis remain consistent, which is that the effect of the relevant policies in terms of PHC in the UK is better than that in China.

In the process of policy evaluation, the authors also found some research shortcomings. On the one hand, the article lacks more quantitative research to support the output of more objective findings. On the other hand, different policies in the same aspect have different policy objectives and goals. Thus, there may be policy cases that are more suitable for comparison between the two countries which the authors didn’t present in this paper.

However, in the qualitative research, the authors not only went through a large number of literature review, but also as far as possible to find the existing relevant data as research support, so that the results of the study more unbiased. Therefore, we can see that the UK is more developed than China in the field of PHC can contribute the future development of PHC in China. From the analysis of the implementation PHC polices and the effects of the implementation them in China, various new problems have emerged.

There is a lack of strict admission criteria for GPs, the existing system of certification for GPs has no legal effects in China. It has led to quality of GPs are imbalance, as a consequence the patients mistrust of the PHC institution's capabilities. [28] In addition, low payment and incomplete career planning have accelerated the loss of GPs, with more people choosing to practice in higher-level hospitals due to better salary. [30]In UK, PHC is guaranteed by UK law, which requires citizens or foreign nationals on visas of six months or more to register and contract with a GPs. This fundamentally ensured the PHC delivery for all citizens. Besides, thanks to completed career path planning for GP and attractive benefits and reputation of this profession in UK, more and more people are willing to become a GP which increased the number of GP team. [9] At last, strict and compulsory certification guaranteed the competent quality of incoming GPs. [28], [30]

On the aspects of cooperation of health care institution, the policy in China doesn't work well as planned at all. In the contrary, internal doctor training program offered GPs a chance to job-hopping to high-level hospitals which dramatically weakening the capacity of PHC institutions. [33], [73] RMCS is only a nominally mutually cooperation plan, it does not fundamentally bind the various medical institutions in the consortium in terms of interests. In contrast, the FTs policy in the UK connects the units within the system together as a "corporate" in terms of financial gain. Despite the absence of PHC institution participation, its accompanying market competition promotes the quality of PHC delivery.

The public medical insurance system has been less helpful in enhancing PHC delivery, but it has great potential. Currently, China has implemented differentiated reimbursement to increase the percentage of insurance reimbursement for patients who choose using PHC delivery. [13] However, as the quality of PHC delivery doesn't meet the needs of patients, patients still will to use high-level hospital which is more trusted as their first choice for PHC with slightly expensive prices. As NHS in

UK is one of the strictest countries in the world to implement the GP system, it proves the importance of interaction and mutuality among policies.

At last, e-health solved the insufficient number of GPs and inequality of medical resources among different regions in China. Online doctor consultation offered an opportunity to patients with timely high quality PHC delivery. But it is worth noting that the current market regulations for e-health are not well developed, and only few regulations are in place for doctor access of PHC institution. Online doctor consultation has also become a popular trend in the UK, while the relevant regulations pay more attention to the protection of platform users' privacy. Overall, this is the only policy with a flat rating due to the rapid development of Internet technology in China which shows a big potential of PHC delivery.

4.2 Implication for China PHC policy

4.2.1 Strict qualification and complete career path for GPs

A comprehensive compulsory assessment system for the qualification of GPs should be established to effectively improve the quality of the GP team. This certification mechanism should be regulated and nationwide unified to reduce the wide variation in GP standards between regions. [30]

Regulate the GP system from the legal point of view. Of course, it is difficult to directly require all people to register as GPs when the current number of GPs in China is not sufficient, which is not in line with the current Chinese national situation. [8] However, by referring to the UK experience, it is still possible to promote this GP performance assessment and income distribution method by encouraging the public to establish contractual relationships with GPs, which will prompt more medical graduates to choose to pursue the GP profession. Finally, through a perfect access

mechanism, it is ensured that the screening of high-quality talents is also focused on enhancing the quantity.

Additionally, strengthen and accelerate the number of medical students in less developed areas for directed training. The shortage of health technicians in less developed areas is generally large, and the introduction of foreign personnel is more difficult due to the economic level. Each local government should make a plan for the development of health technical personnel and put forward a plan for the demand for talents, which should then be reviewed and coordinated by the relevant provincial departments. [18]

4.2.2 Unit the RMCS in a higher level

Referring to the UK development experience, bundling the interests of the various implementing healthcare institutions within the RMCS facilitates intersectoral mutual assistance and integration. Since then, each medical institution is no longer a separate individual, and the process of health care delivery is not solely based on its own interests, promoting the original purpose of this consortium which is to improve the overall quality of medical services and reduce the cost of medical services.

Through such a program, the horizontal integration of RMCS and the vertical integration between different medical institutions can be promoted to a certain extent, facilitating the flow and sharing of high-quality health resources between different institutions and improving the service capacity and level of medical service institutions in general. [73]

In response to the Chinese social system that may make it difficult to decentralize public hospitals to the market, we can also introduce a performance scoring system between RMCS in each region. By indirectly binding the interests of institutions within the consortium, we can promote cooperative exchanges among institutions.

4.2.3 Strength the regulation of e-health platform

Through the Internet platform, everyone can share all kinds of social resources in a timely manner, which promotes the development of social equity. Similarly, when Internet technology is applied to the medical field, it also serves to promote the optimal distribution of medical resources. [14], [68] The Internet is an all-encompassing information interface tool that extends medical services from inside the hospital to outside the hospital. Through the Internet platform, patients can easily access good out-of-hospital medical services. For minor problems, the doctor can answer directly online, so the patient does not have to go all the way to the hospital and spend a lot of energy registering, waiting in line, and visiting the hospital. If he or she needs to come to the hospital, the Internet platform can help the patient make an appointment with the appropriate specialist in advance, and the doctor will tell the patient what information he or she needs to bring - a significant improvement in the efficiency of the treatment.

This significantly improves the efficiency of the treatment and multiplies the effect with half the effort. Patients can use their smartphones for intelligent medical guidance, online appointments, remote diagnosis and treatment, examination report inquiries, and online payment, which greatly reduces waiting times, promotes information transparency, ensures patient safety, and improves medical relationships. It has brought great changes especially to rural areas where doctors and abundant medicines are lacking. [37]

Promoting a new policy cannot be done without principles, but under the premise of regulation. Health care is, after all, closely related to human life and health, norms are essential to ensure online health care quality and safety. The first thing to pay attention is the management of professionals' qualifications, allowing access to online platform that meet the conditions and management norms. In addition, the online

consultation process should be regulated to ensure PHC quality and safety by a recording a backup by related authority intervention.

5 Conclusion

PHC is an important aspect in China's new health reform period. Although many of the current policies are not fully functional based on the evaluation results, there is still great potential after scientific correction and improvement. By combining policy evaluation and comparative research methods, the author not only summarizes the problems that arise in the current development of PHC in China, but also compares the evaluation results between China and the UK, and finally argues that the development of PHC in the UK is higher than the level in China. Finally, through the analysis of the evaluation results of similar PHC systems in China and the UK, three suggestions are outputted for the future development of the PHC system in China.

First, the GP system should be improved by strengthening the assessment criteria and salary system for GPs. Secondly, while creating medical consortia, it should not only focus on superficial mutual assistance, but also combining them as a community of interest through consortium performance assessment system, so that they have the incentive and motivation to improve the quality of PHC delivery internally and proactively. Finally, about the field of e-health, related regulation needs to be constantly evaluated according to the current situation to ensure the healthy development.

However, the authors also found some research shortcomings in the process of policy evaluation. On the one hand, the article lacks more quantitative research to support the output of more objective findings. On the other hand, different policies in the same aspect have different policy objectives and goals. Thus, there may be policy cases that are more suitable for comparison between the two countries which the authors didn’t present in this paper.

In the past year, the world has been shrouded in fear of the COVID-19. It further reflects the importance of e-health to the development of the PHC system. People do

not need to meet with a doctor face-to-face meanwhile you can conduct self-assessment through the health care information sent by their GP or complete PHC delivery through online doctor consultation. By this way, it not only ensures the safe of GPs and health care workers, but also controls the spread of the virus by reducing unnecessary transportation usage. In short, both in China and the world, e-health has great potential. This paper may marginally contribute to the current situation of the world health care situation. In future research, the author may not be limited to the online doctor consultation policy in the e-health polices, but also on other aspects such as online drug delivery after online consultation.

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Annex 1 Number of GP 2013- 2018 in China

中国社会统计年鉴—2019

3-13 分地区全科医生数(2018年)
General Doctor by Region (2018)

单位：人 (person)

年份 Year 地区 Region	全科医生数 General Doctor	注册为全科医学专业的人数 Persons Registered as Professional in General Medicine	取得全科医生培训合格证书的人数 Persons Obtaining General Doctor Training Certificate	每万人口全科医生数 General Doctor per 10 000 persons
2013	145511	47402	98109	1.07
2014	172597	64156	108441	1.27
2015	188649	68364	120285	1.37
2016	209083	77631	131452	1.51
2017	252717	96235	156482	1.82
2018	308740	156800	151940	2.22
北京 Beijing	8861	5223	3638	4.11
天津 Tianjin	4138	2350	1788	2.65
河北 Hebei	11292	3960	7332	1.49
山西 Shanxi	5962	2173	3789	1.60
内蒙古 Inner Mongolia	4894	2118	2776	1.93
辽宁 Liaoning	9002	4815	4187	2.07
吉林 Jilin	4965	2173	2792	1.84
黑龙江 Heilongjiang	5637	2453	3184	1.49
上海 Shanghai	8629	7106	1523	3.56
江苏 Jiangsu	47794	33241	14553	5.94
浙江 Zhejiang	26047	10777	15270	4.54
安徽 Anhui	12917	6361	6556	2.04
福建 Fujian	8182	3545	4637	2.08
江西 Jiangxi	5620	2101	3519	1.21
山东 Shandong	17426	7929	9497	1.73
河南 Henan	20497	9327	11170	2.13
湖北 Hubei	10863	4787	6076	1.84
湖南 Hunan	8841	4229	4612	1.28
广东 Guangdong	27638	18791	8847	2.44
广西 Guangxi	7958	3408	4550	1.62
海南 Hainan	1353	696	657	1.45
重庆 Chongqing	6348	3114	3234	2.05
四川 Sichuan	13404	3404	10000	1.61
贵州 Guizhou	6238	3189	3049	1.73
云南 Yunnan	6381	2675	3706	1.32
西藏 Tibet	352	239	113	1.02
陕西 Shaanxi	4979	1953	3026	1.29
甘肃 Gansu	4835	1507	3328	1.83
青海 Qinghai	1315	613	702	2.18
宁夏 Ningxia	1279	604	675	1.86
新疆 Xinjiang	5093	1939	3154	2.05

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Annex 2 Number of GP 2012 in China

2-3-5 2012年各地区分类别执业(助理)医师和全科医生数

地区	执业(助理)医师数					全科医生数			每万人口全科医生数
	合计	临床	中医	口腔	公共卫生	合计	注册为全科医学专业的人数	取得全科医生培训合格证书的人数	
总 计	**2616064**	**2023435**	**368264**	**116225**	**108140**	**109794**	**37173**	**72621**	**0.81**
东 部	1174399	910350	153299	60908	49842	66401	24033	42368	1.19
中 部	779643	618552	101821	29431	29839	22192	7544	14648	0.52
西 部	662022	494533	113144	25886	28459	21201	5596	15605	0.58
北 京	74380	51810	13196	6223	3151	8137	4106	4031	3.93
天 津	30690	22747	5345	1553	1045	1095	174	921	0.77
河 北	142989	114438	19955	5262	3334	3493	815	2678	0.48
山 西	87319	66717	13383	4082	3137	2552	755	1797	0.71
内蒙古	59528	42683	10669	2703	3473	1679	539	1140	0.67
辽 宁	100972	78648	11499	6150	4675	3304	1322	1982	0.75
吉 林	61400	47026	7893	3850	2631	1231	409	822	0.45
黑龙江	78589	61884	9041	4902	2762	2081	661	1420	0.54
上 海	55797	42352	6183	3887	3375	5323	3324	1999	2.24
江 苏	157902	125039	17457	7224	8182	15068	5520	9548	1.90
浙 江	129973	101142	16696	7354	4781	12251	3828	8423	2.24
安 徽	92061	75201	9970	2837	4053	3191	1298	1893	0.53
福 建	66740	49324	10710	3643	3063	2594	745	1849	0.69
江 西	67077	52388	9353	1831	3505	2081	697	1384	0.46
山 东	200465	159484	22980	8418	9583	6775	1242	5533	0.70
河 南	167608	134252	22876	5154	5326	4722	1564	3158	0.50
湖 北	109149	87771	13050	4196	4132	3752	1190	2562	0.65
湖 南	116440	93313	16255	2579	4293	2582	970	1612	0.39
广 东	198966	152754	27868	10413	7931	7940	2776	5164	0.75
广 西	78043	61154	9986	3434	3469	3087	611	2476	0.66
海 南	15525	12612	1410	781	722	421	181	240	0.47
重 庆	51990	37465	10866	1973	1686	1632	413	1219	0.55
四 川	162877	115318	36487	5482	5590	4665	1452	3213	0.58
贵 州	49179	39112	6118	1543	2406	1032	420	612	0.30
云 南	68466	53445	8404	2742	3875	3212	642	2570	0.69
西 藏	4043	2597	999	105	342	34	18	16	0.11
陕 西	69471	54531	10019	2840	2081	1824	332	1492	0.49
甘 肃	42956	29934	9983	1533	1506	1389	374	1015	0.54
青 海	11918	9092	2036	350	440	462	125	337	0.81
宁 夏	13011	9803	1717	815	676	260	66	194	0.40
新 疆	50540	39399	5860	2366	2915	1925	604	1321	0.86

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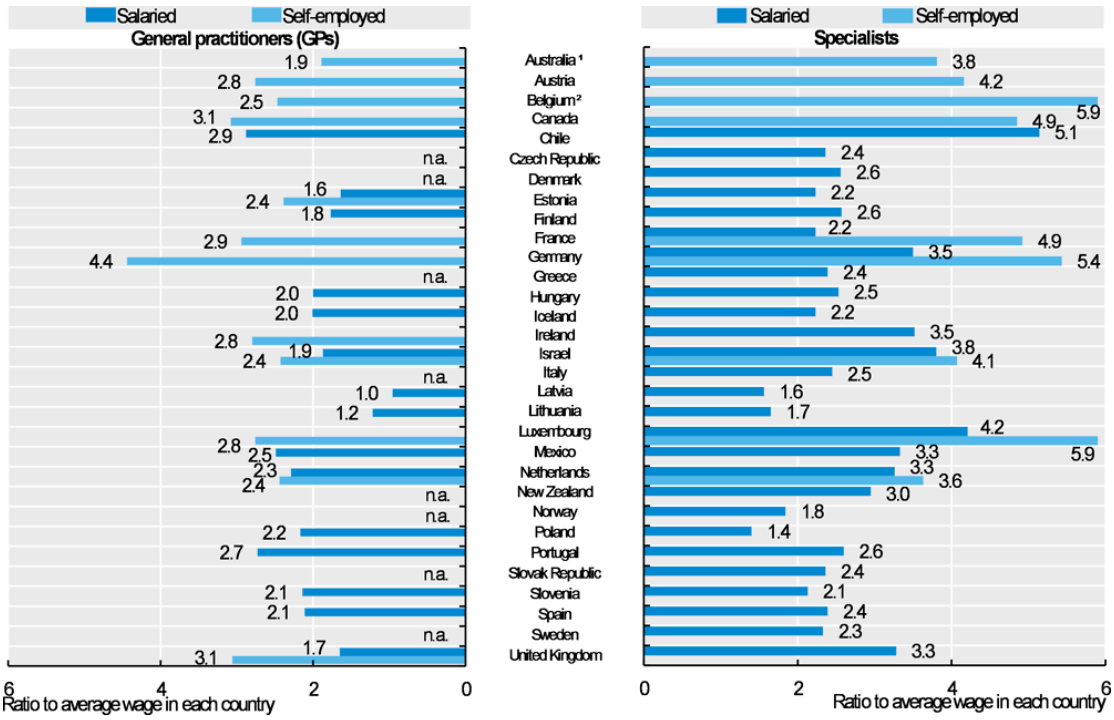
Annex 3 Remuneration of doctors

Remuneration of doctors, ratio to average wage, 2017 (or nearest year) from OECD



Institute of Sociological Studies

Master thesis propsal

Primary health care development during the health care reform in China and future direction---With experience inspiration from UK

Preliminary Scope of Work

China moved to a market economy in the 1980s. The role of government has been substantially reduced in all economic and social sectors, including health care. It was the time China started its health care reform.

Unlike Europe, most people do not have their own general practitioner (GP) due to the large population and insufficient primary medical facilities in China. Most of patients choose to go to a large hospital for PHC directly which seriously increases the burden of medical institutions. This phenomenon has become more prominent in recent years.

Therefore, primary health care (PHC) became one of key areas in China's health system reforms since 2016. PHC is a crucial part and foundation in health care system. It is the first level for health care to contact and connect with individuals, family and community. PHC constitutes the first element of a continuing health care process.

Nowadays, China is promoting the establishment of hierarchical medical system to ensure people have a functional primary health care system. Medical institutions of different levels undertake the treatment of different diseases, and gradually realize the medical process from general treatment to professional.

To be better developed, I would like to explore the situation of PHC in China in this paper and try to find what are the difficulties while implementing government measures and how e-health may be benefiting it. In the end, I would like to analysis good experience and approaches from UK which could be applied in the PHC development in China after localization.

Key words: Primary health care, hierarchical medical system, health care reform, china, e-heath